

3.0 HAZARD IDENTIFICATION, VULNERABILITY, RISK

3.1 Boise County Wildfire: Fuel, Weather, Topography, and Wildland/Urban Interface (WUI)

Historic Occurrence

Boise County has been the site of numerous large wildfires since 1910. The fuels, weather and topography in Boise County combine to make wildfire an annual hazard with associated risks. Recent large fires that have impacted Boise County and its residents include intense fires of over 100,000 acres, including:

1989: a fire that caused the evacuation and burning of part of Lowman and most of the surrounding area;

1994: a large complex of fires east of Idaho City burned for 2 months consuming over 100,000 acres, impacting County fire and law enforcement resources, visitation, and air quality while destroying timber and degrading water quality.

In addition, as recent as the year 2000, a human caused fire in the South Fork Canyon in Garden Valley burned over 1000 acres in two days.

Large or multiple large wildfires have occurred in Boise County every decade since 1910. Landscape scars from past intense large wildfires are obvious in much of the County. The vegetative recovery from many of these wildfires is ongoing.

The large wildfires in Boise County generally burn in a west to east pattern, but a southwest to northwest pattern has also occurred with some regularity. Though lightning historically ignites the highest percentage of the wildfires in Boise County, human ignition has been the cause of three large fires in recent years. These human-caused wildfires burned over 1,000 acres each and were in or near the communities of Garden Valley, Gardena, and Banks.

Large wildfires in Boise County have impacted most residents, reduced visitation, degraded air quality, increased soil erosion, and resulted in watershed contamination. Mitigation of soil erosion potential and vegetation rehabilitation after large fires in Boise County has been required, adding expense to County, State and Federal agencies. (Appendix A Map 4, Boise County Wildfire History).

3.2 Wildfire Fuels and Risk in Boise County

Fuels that contribute to wildfires in Boise County range from sagebrush/grass to Ponderosa Pine, with spruce/fir or lodgepole pine evident at higher elevations or on north aspects. The sagebrush with grass and Ponderosa Pine regimes are the major wildfire fuels near communities, homes or developments.

Changes in the vegetation within Boise County continue to occur, with these changes being most obvious in the Ponderosa Pine dominated areas. Fire exclusion and lack of mechanical treatment (thinning) have resulted in dense stands of small Ponderosa Pine in many areas, with Douglas or Grand Fir on north aspects. These small, densely packed trees provide available fuel for wildfire spread and increased intensity. Drought, combined with these dense stands, has increased tree mortality from insects since the 1990s, which provides additional dead vegetation to fuel future wildfires.

The hazard and risk associated with wildfire fuels in Boise County is dependent upon vegetation type (sage/grass, forest timber types), conditions, natural fire regimes and assigned condition classes. Map 5 in the appendix illustrates the natural fire regimes of Boise County (the historic, pre-settlement, natural occurrence of wildfires and the severity of these historic fires). Boise County Fire History (Appendix A) Map 4 shows where large fires occurred from 1900-1950. Most Boise County developments and communities are located in or adjacent to Natural Fire Regime I, in which frequently occurring, low severity fire would historically occur every 0 to 35 years. These areas are now in Class II or III described below. Conditions of the fuels in Fire Regime I change according to the alteration of historic range and frequency. These changes are identified as Condition Classes (Appendix A Map 5). Condition Classes for Fire Regime I in Boise County are:

- **Condition Class I:** Fire regimes are within or near historical range. The risk of losing key ecosystem components is low. Fire frequencies have departed from historical frequencies by no more than one return interval (35 years for Fire Regime I in Boise County). Vegetation attributes are intact and functioning within a historical range (species composition and structure). *Where appropriate, these areas can be maintained within the historical fire regime by treatments such as prescribe fire or fire use.*
- **Condition Class II:** Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components has increased to moderate. Fire frequencies have departed from historical frequencies by more than one return interval. The results are moderate changes to one or more of the following: wildfire size, wildfire intensity, severity, and frequency. Vegetation attributes have been moderately altered from their historical range (species composition and structure). *These areas may need moderate levels of restoration treatments, such as prescribed fire, fire use, hand or mechanical treatments, or a combination of these, to be restored to the historical fire regime.*

- **Condition Class III:** Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This will result in dramatic changes to one or more of the following: Wildfire size, intensity, severity, frequency and landscape patterns. Vegetation attributes have been significantly altered from their historical range. *These areas may need high levels of restoration treatments, such as hand or mechanical treatments. These treatments may often be necessary before fire is used to restore the historical fire regime.*

Areas in Boise County that experienced large wildland fires between 1900 and 1950 are currently classified as Class II or Class III.

The fire regime condition class of this vegetation, county vulnerability, and watershed protection provide the basis for identifying hazards and assigning risks.

The Boise County Wildfire Group has addressed three fire condition classes in relation to vegetation conditions: **Low Risk, Moderate Risk, and High Risk.**

Low Risk: Areas or watersheds have vegetation in a condition that will pose little risk of a large fire, but will need to stay in the current condition through maintenance such as continued cultivation, or use of prescribed fire, mechanical or biological treatments. *An example of low risk would be an open stand of Ponderosa Pine (no thickets of saplings), or an area that was recently treated with prescribed fire. Condition Class I.*

Moderate Risk: Areas and watersheds with excessive accumulation of understory fuel build ups that, if ignited, will result in a more intense wildfire, would be difficult to suppress, could spread to adjacent lands and could have a negative impact on watersheds and soil quality. *An example of a moderate risk is Ponderosa Pine with numerous saplings and openings with thickets of small trees, or sagebrush with cheatgrass as the major species. Condition Class II.*

High Risk: Areas and watersheds with excessive dead or dying vegetation with large quantities of small densely packed trees among large trees. A wildfire ignited in the high risk areas will be very difficult to suppress, can yield a fire of high intensity that can damage all the vegetation and lead to soil erosion and water contamination. *An example of high risk is Ponderosa Pine with dense thickets of understory trees that can carry the fire up into the larger trees, or areas totally dominated by cheatgrass. The described tree thickets are very moisture-dependant and drought prone; whereas, cheatgrass areas are characteristically prone to intense, fast moving wildfires. Condition Class III.*

The dynamics of biomass growth, vegetation condition, health and results of vegetation treatment within Boise County must be evaluated periodically and the associated risk or hazards modified as conditions change.

3.3 Boise County Weather

The wildfire season in Boise County is June through September. The highest fire danger usually occurs in July and August. Historic large fires in Boise County have also occurred during these months. It is common to have numerous consecutive days of “Very High” to “Extreme” fire danger in Boise County from July through September. Thunderstorms ignite most of the wildfires during the high fire danger periods, and can often start 20 wildfires from one storm, with over 60 wildfires started in the County by one storm in 2002. (Appendix A Map 8 Wildfire Starts in Boise County).

3.4 Boise County Topography

The mountainous terrain of Boise County contributes to the wildfire hazard. The major river drainages contain extreme slopes and much of the county is situated on slopes in excess of 40 percent (Appendix A, Map 2). This terrain enhances increased rates of spread by wildfires through radiant heat, which preheats fuels uphill from a fire. The rugged topography in most of the county also makes access to wildfire ignitions difficult or time consuming for ground wildfire suppression forces. Most human caused large fires in Boise County are ignited in river or canyon bottoms during high fire danger and have historically spread rapidly to several hundred acres (Appendix A Map 4).

3.5 Boise County Wildland/Urban Interface (WUI)

Boise County contains numerous developments that are in two of the three defined WUI categories. These categories are:

Classic Interface: An area where well-defined urban and suburban development press up against open expanses of wildland areas.

Mixed Interface: Isolated homes, subdivisions, and small communities situated predominantly in wildland settings

Occluded Interface: Characterized by islands of wildland vegetation occurring inside largely urbanized areas.

Most Boise County subdivisions are in the **mixed interface** category, with some incorporated towns fitting the **classic Interface** definition.

WUI areas of moderate and high risk were previously identified in Hazard Assessments and Mitigation Reports that were conducted by Dynamac Corporation in 2001 for the Bureau of Land Management. In these surveys, areas with Ponderosa Pine fuel type, HIGH RISK was assigned to 70% of the areas, with MODERATE RISK being assigned the remaining 30%.

Evaluation of these areas used a combination of fuel and structural surveys. Structural surveys used NFPA 1144 Wildfire Hazard Survey Checklists. Fuel surveys combined fuel types, densities, depth, aspect and elevation for ratings. Additional ratings of Boise County subdivisions were conducted in 2003 using NFPA 1144 (an updated version of NFPA 299). The Wildfire Hazard Mitigation reports done in Boise County during 2001 can be viewed at www.dynamac.com/wildlandfire.

WUI watersheds that are identified as high or moderate hazards will be identified as priorities (Appendix A, Map 6 Boise County WUI Watershed Map, and Fire Regime Condition Class).

County Vulnerability/ Hazard Location

Boise County infrastructure, homes, transportation corridors, watersheds, air quality and other natural resources are an important part of the welfare, quality of life, visitation and beauty of the county. The county currently has over 5,300 homes and other property valued at more than \$400 million, 12 Volunteer Fire Departments, two major state highway transportation corridors, critical watersheds vulnerable to wildfire, recreation, irrigation, and endangered species. Timber resources on private, state and public land are a critical vulnerable resource. Federal and State agencies are the major land owners and provide wildfire protection for most of Boise County, combined with protection areas of the Volunteer Fire Departments. Wildfire response-protection districts in Boise County are provided on Map 3 of the Appendix.

County emergency services communications are critical to life and safety in Boise County. Improvement, updating and planning for these communications is necessary for future fulfillment of emergency service response to residents, visitors, and those traveling through the county. County emergency services communication towers at risk are identified on Map 3 as are Volunteer Fire Department response areas and names correlated with both incorporated and major unincorporated communities within Boise County.

In addition to developments, communities and homes, Boise County vulnerability to wildfire also includes county structures located in Idaho City, the county courthouse, and county administrative building, and community primary and secondary schools located in Garden Valley, Lowman, and Idaho City.

The two state highway transportation corridors, Highway 55 and Highway 21 are vulnerable to wildfire and have been closed to traffic because of wildfires. Boise County and U.S. Forest Service roads have been closed on numerous occasions because of wildfires.

The provided WUI watershed risk map (Appendix A Map 6) depicts vulnerable areas of the county on Federal, State, and private lands. The map should assist the County, private land owners, State and Federal agencies in identification of risk areas, and prioritization of mitigation actions.

Values at risk to wildfire in Boise County includes privately owned homes and property, County assets (buildings, communication sites, road/highway stabilization or repair), millions of board feet of public, state and private timber, community dependant watersheds, soil stability concerns, critical wildlife winter ranges, recreational activities and tourism, and the safety of residents, visitors, and fire fighters in the fuel types, conditions and rugged terrain of Boise County.